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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/570,807	05/31/2007	Binghe Wang	24W01.1-011	4895
23506 7590 12/07/2009 GARDNER GROFF GREENWALD & VILLANUEVA, PC 2018 POWERS FERRY ROAD SUITE 800 ATLANTA, GA 30339				
EXAMINER CHANDRAKUMAR, NIZAL S				
ART UNIT		PAPER NUMBER		
1625				
NOTIFICATION DATE		DELIVERY MODE		
12/07/2009		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patent@gardnergroff.com
mkandeer@gardnergroff.com

Office Action Summary

Application No.

10/570,807

Applicant(s)

WANG ET AL.

Examiner

NIZAL S. CHANDRAKUMAR

Art Unit

1625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,24-28,64-74 and 110-112 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,24-28,64-74 and 110-112 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date ____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Applicants response filed 11/10/2009 is acknowledged.

Claims status:

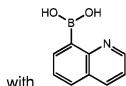
Claims 1, 24-28, 64-74 and 110-112 are pending. Claims 2-23, 29-63, 75-109 have been cancelled.

Claim 1 was drawn to the elected group and was examined. Claims 24-28, 64-74 and 110-112 were withdrawn from consideration due to election/restriction. The election was made final.

Applicants request rejoinder of non-elected, presently amended claims. All the claims are examined in view of the amendments

The previously indicated allowability of claim 1 is withdrawn due to amendment to

claims, because the instant amendment replaces with



Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 25, 64 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 25 recites the limitation "salt or ester". There is insufficient antecedent basis for this limitation in the claim.

Claim 23 is drawn to two compounds. As such, it is unclear which is the compound claim 64 is drawn to.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, (and dependent claims 24-28, 64-74 and 110-112) rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious

over Goldman et al, Analytical Chemistry (1970), 42(11), 1186-8 further in view of Adhikiri et al. Tetrahedron Letters, (1999), 40, 7893-7896 (provided by the applicant).

102 Reasoning:

Goldman et al. teach



which is the first compound of claim 1.

103 Reasoning.

Instant claims are drawn to water soluble boronic acids fluorescent reporter compounds and methods of use these compound in detecting analytes.

Goldman et al. teach of that the fluorescence efficiency of the compound of the instant base claim boronic acid shown above is not significantly affected by H-bond-accepting species, but singlet-to-ground internal conversion, presumably involving solvent interactions with the -B(OH)₂ group and is an important process for this molecule in hydroxylic media.

Adhikiri et al. teach water soluble boronic acid (see page 7894, compound 1) useful as chemosensor at neutral pH. Adhikiri et al. teach that the design of saccharide-sensors relies on an adherence of the fluorphore as the reporting unit.

The above prior art do not teach the other boronic acid compound the base claim 1 and thus of the dependent claims.

However the adherence and the fluorescence properties (of Adhikiri et al) are the key elements in the method of using the boronic acid of Goldman et al. in detecting analytes. The instant claim limitations such as forming aqueous solution of specific molarity (instant claim 24), making pharmaceutical compositions (claims 25-26), modifying macromolecule (for example, in situ, potential formation of boronic ester with the hydroxyl groups of the macromolecule, claims 27,28, 64-74) and making articles 110-112 relate to the inherent properties (such as aqueous solubility of boronic acids and boronic ester formation with diols of saccharide macromolecules) of the prior art of Goldman et al. in view of the teachings of Adhikiri et al. All the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 24-28, 64-74 and 110-112 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yang et al. *Bioorganic & Medicinal Chemistry Letters* (2003), 13(6), 1019-1022.



Yang et al. teach

which is the first compound of claim 1, 8-quinoline

boronic acid as a novel type of fluorescent probe for carbohydrates. This boronic acid responds to the binding of a carbohydrate with over 40-fold increases in fluorescence intensity and shows optimal fluorescence change at physiological pH in aqueous solution.

Yang et al. do not teach the other boronic acid compound the base claim 1 and thus of the dependent claims.

The entire subject matter of the prior art is identical to the subject matter of the instant case. The instant claim limitations such as forming aqueous solution of specific

molarity (instant claim 24), making pharmaceutical compositions (claims 25-26), modifying macromolecule (for example, in situ, potential formation of boronic ester with the hydroxyl groups of the macromolecule, claims 27,28, 64-74) and making articles 110-112 relate to the inherent properties of the boronic acid as taught by Yang et al. and are well within the knowledge of a practicing analytical chemist.

Claims 1, 24-28, 64-74 and 110-112 are rejected.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NIZAL S. CHANDRAKUMAR whose telephone number is (571)272-6202. The examiner can normally be reached on 8.30 AM - 4.30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Andres can be reached on 571 0272-0867. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nizal S Chandrakumar/
Examiner, Art Unit 1625

/D. Margaret Seaman/
Primary Examiner, Art Unit 1625